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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,649	03/30/2000	ROBERT ARTHUR LEE	CU-2137TFP	7785

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EXAMINER

CHANG, AUDREY Y

ART UNIT PAPER NUMBER

2872

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/509,649

Applicant(s)

LEE ET AL.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-26, 28 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-26, 28 and 30-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 15, 2005 has been entered.
2. By this amendment, the applicant has amended claim 19.
3. Claims 19-26, 28 and 30-36 remain pending in this application.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 19-23, 26, 28, 30-32 and 35-36 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The reasons for rejections have been set forth in the previous Office Action.

Claim 19 has been amended to include the feature of "having *one of a limited number* of different non-diffracting gray scale region structure types, each structure type having physical characteristics which provide a particular level of diffuse scattering of incident light". The specification fails to give explicit teachings about (1) what are these "non-diffracting gray scale-region-structure types", (2) what specific

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structures are included in the “predefined group”, and (3) what are the “physical characteristics” that is capable of providing “a particular level of diffuse scattering of incident light”. The specification fails to teach specific *working examples* or *operable examples* of such claimed functions which therefore fails to enable one skilled in the art to make and/or use the invention. The applicant is respectfully reminded that the specification needs to give explicit teachings as what are considered to be the “predetermined group of different non-diffraction gray scale region structure types”. By saying this verse does not really give any actual teachings about the structures. If the structures are concerning to physical *grooves*, then such should be explicitly taught. The spacing, the size or any other features that give the “different non-diffraction gray scale region structures must be explicitly taught”. At this juncture, the specification fails to enable one skilled in the art to make and/or use the subject matters stated here. No physical substantial knowledge concerning the “group of structures” is given in the specification. Claim 26 also include the similar phrase “different non-diffracting gray scale region structure types” that is rejected for the same reasons stated above. *Claims 20-23, 28, 30-32, and 34-36 inherit the rejection from their respective base claims.* Clarifications are required.

In response to applicant’s arguments stated in the remark, the specification cited by the applicant, (page 5, lines 23-30 and page 6, 6-13) fail to provide what is considered to be the “non-diffracting gray-scale structure types” and fails to provide what is the “diffuse scattering and the associated gray-scale characteristics”. There is not any actual “type” of the “non-diffracting gray-scale structure types” ever be disclosed in the claims. There are no actual structures or any working examples ever being disclosed in the specification except the word “structure”. The word structure does not make the structure enable. A surface relief DOES NOT considered to be a working example to the specific “non-diffraction grey-scale structure type”. Also the applicant and any person skilled in the art would understand that even grating relief structure will only diffract light with *certain range of wavelengths and for the light having wavelengths not in the*

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range the grating relief structure will scatter the light in non-diffracting manner. The crucial factor in deciding “non-diffracting” and “diffracting” is therefore not just about the structure itself rather about the wavelength of the incident light as well. In this manner, the applicant further fails to explain what are these “structure types” that are *non-diffracting*. If one skilled in the art would construe the limitations concerning the “non-diffracting gray scale region type” then why can the applicant provide an example to demonstrate it? The specification at this juncture really provides NO working examples to demonstrate the claimed “types”.

Claim Objections

6. Claims 19-23, 28, 30-32, and 34-36 objected to because of the following informalities:

(1). Claim 19 has been amended to include the feature “having one of a limited number of different non-diffracting grey scale regions structure types” that is confusing and indefinite since it is not clear what is considered to be the “*limited number*”. It is not clear what exactly is this “limited number”.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 19-26, 28, and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Lee (PN. 5,825,547) in view of the patents issued to Modegi (PN. 5,784,200) and Solmsdorf (PN. 5,808,758).

Lee teaches a *diffractive device*, having *surface relief structure*, that serves as the *device having surface relief structure*, wherein the diffractive device comprises a plurality of *tracks* that each of the tracks comprises diffraction grating grooves such that the diffraction gratings generates optically variable images when illuminated. Lee teaches that the diffracting tracks **further** comprise *diffusely reflecting regions* and *specularly reflecting regions within* the diffracting regions or tracks wherein the diffusely reflecting regions are used to *encode auxiliary information*, (please see column 7, lines 39-45). These diffusely reflecting regions are formed by having *randomly spaces grooves*, which serve as the **non-diffracting gray scale regions** and will implicitly give certain level of diffuse scattering of the light depending on the arrangement of the grooves. Lee teaches that the diffracting tracks have a width less than 0.25 mm, which therefore suggests that the **non-diffracting** diffusely reflecting regions also have a width, less than 0.25 mm since these diffusely reflecting regions are **within** the diffraction region of the track. It is implicitly true that the diffusely reflecting regions are *non-diffraction regions* since diffusion phenomenon is different from diffraction phenomenon, also **randomly** spaced grooves cannot cause diffraction of the incident light. Lee teaches *specifically* that these **diffusely** reflecting regions are used to encode **auxiliary information** that are not found in the diffraction image, (please see column 7, lines 43-44). It is implicitly true that this auxiliary information may include graphical text and/or image. Lee further teaches, in a different embodiment, that **graphical micro-writing** (13, Figure 9, column 8, lines 15-34) may be embossed and formed in between the diffraction regions of the diffraction tracks, which correspond to another form of **non-diffraction gray scale regions**.

This reference has met all the limitations of the claims. This reference however does not teach *explicitly* that the diffusely reflecting regions provide *different* levels of diffusing characteristic or gray scale to the incident light. However it is common knowledge to one skilled in the art that the intensity of the diffusely scattered light *directly depends* on the *density* of the *scattering center in the regions*, (*that is to say if the regions has high density of matters that scatter the incident light, the scattered light will have-*

lower intensity or brightness). The level of the intensity or the grey scale of the light scattered by the diffusely reflecting regions must therefore depends on the arrangements, the density and the physical sizes of the grooves in the diffusely reflective regions. **Modegi** et al in the same field of endeavor teaches explicitly that the brightness of pixel patterns is corresponding to the *density values* of the pixels, (please see column 2, lines 60-63). The density value is referred to the *density* of the scattering lines (i.e. the scattering centers) in the pixel. It would therefore have been obvious to one skilled in the art to modify the diffusely reflecting regions to have different level of brightness or grey scale, by changing the density of the grooves or the physical size of the grooves, for the benefit of allowing the auxiliary information encoded within is capable be viewed with different gray scale to add extra level of security to the device.

This reference also does not teach explicitly that the encoded auxiliary information in the diffusely reflection regions are together to generate a macroscopic graphical, line art or image. However such feature is considered to be obvious matter of design choice to one skilled in art for the benefit of designing the encoded information as desired. **Solmsdorf** in the same field of endeavor also teaches to design the diffusely scattering regions on a data carrier to be arranged to give a macroscopic graphic design, (please see Figure 1). It would therefore have been obvious to one skilled in the art to modify the device of Lee accordingly for the benefit of providing a macroscopically recognizable graphical design to the diffractive device.

With regard to claim 21, Lee teaches that the surface pattern of the diffractive device may have a surface area dimension of 30 micron by 30 micron, it is implicitly true that the area dimension for the diffusely reflecting regions is less than such, (please see column 6, lines 63-65).

With regard to claims 22-23, and 25, Lee does not teach explicitly that the individual diffusely reflecting non-diffraction region comprises an identical or a different image. However such modification is considered to be an obvious matter of *design choice* to one skilled in the art for the benefit of having

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the degrees of freedom to print different types of graphical information for enhancing the ability of anti-forgery and the applications of the document.

With regard to claim 28, Lee teaches that the diffraction tracks having diffraction grating regions with relief grooves structure that each of the diffraction gratings generates an optical variable image upon illumination of light. Optical variable image means the image varied in response to the viewing direction and position of the observer.

With regard to claim 30, Lee teaches to include the above- mentioned diffusely reflecting regions and specularly reflecting regions, which have the ability of enhancing the contrast of the diffracted images stored in the diffraction tracks. It is known in the art that the non-diffraction regions interposed between the diffraction regions have the ability of enhancing the diffracted images of the diffraction regions.

With regard to claims 34-36, Lee teaches that the diffractive device may be adapted for application as security devices for currency notes or credit card. The idea of matching the image presented by the diffractive device and the currency note or credit card is *an obvious matter of design choice* to one skilled in the art since it involves only routine skill in the art and it has the advantages of serving the purpose of anti-forgery. The manners with respect to the actual inspection of the authentication of the security device having the diffraction gratings, recited in claims 35 and 36, do not differentiate the claimed device from prior art device satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ 2d 1647 (1987).

Response to Arguments

9. Applicant's arguments filed on March 15, 2005 have been fully considered but they are not persuasive.
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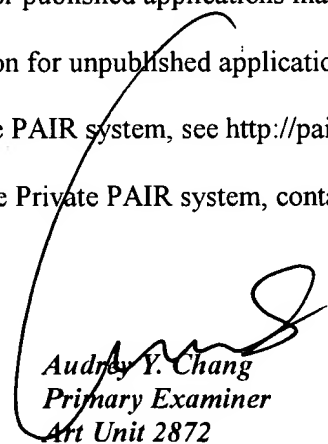
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10. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. pixels of a grey scales having N bits,) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is not clear how does the "pixels of a grey scale having N bits" relate to anything recited in the claims. The arguments seem to be based on something that is not related to the elements recited in the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Audrey Y. Chang
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.